08- R -2246

A RESOLUTION
BY FINANCE/EXECUTIVE COMMITTEE

A RESOLUTION AUTHORIZING THE MAYOR TO EXECUTE AMENDMENT NO. 3 FOR THE INTERGOVERNMENTAL AGREEMENT WITH THE U.S. GEOLOGICAL SURVEY, UNITED STATES DEPARTMENT OF INTERIOR, FOR FC-6004007858, TO PROVIDE ADDITIONAL FUNDING FOR THE 2009 CALENDAR YEAR IN AN AMOUNT NOT TO EXCEED ONE MILLION ONE HUNDRED EIGHTEEN THOUSAND SEVEN HUNDRED FORTY SEVEN DOLLARS AND NO CENTS ($1,118,747.00) ON BEHALF OF THE DEPARTMENT OF WATERSHED MANAGEMENT; ALL CONTRACTED WORK SHALL BE CHARGED TO AND PAID FROM FUND, DEPARTMENT ORGANIZATION AND ACCOUNT NUMBER 5051 (WATER & WASTEWATER REVENUE FUND) 170603 (DWM INDUSTRIAL WASTEWATER MONITORING) 5213001 (CONSULTING/PROFESSIONAL SERVICES-TECHNICAL) 7210000 (PROTECTIVE INSPECTION ADMINISTRATION); AND FOR OTHER PURPOSES.

WHEREAS, the City of Atlanta ("City") did enter into an Intergovernmental Agreement with the United States Geological Survey, United States Department of Interior for FC-6004007858, for the Water Quality and Water Quantity Long Term Monitoring Network to maintain and operate water monitoring equipment on behalf of the Department of Watershed Management; and

WHEREAS, Sections §2-1602 & §2-1604 of the Procurement Code of the City of Atlanta, authorizes Intergovernmental Agreements with other public entities; and

WHEREAS, the U.S. Geological Survey, United States Department of Interior is a public entity; and

WHEREAS, the City is improving its wastewater system under a consent decree program that will result in improved water quality in streams that flow through its boundaries; and

WHEREAS, the City has instituted a program known as "Clean Water Atlanta," one of the components of which is to monitor water quality of major streams and rivers in Atlanta, and has commenced a long term water quality and water quantity monitoring program through the above-referenced Intergovernmental Agreement with U.S. Geological Survey, United States Department of Interior; and

WHEREAS, U.S. Geological Survey, United States Department of Interior has performed the contracted services satisfactorily; and

WHEREAS, the funding for the 2005 calendar year was adopted by the City Council on September 7, 2004 and approved by the Mayor on September 15, 2004 under Resolution

04-R-1499 in the amount of Three Million Four Hundred Forty-Nine Thousand Four Hundred Dollars and No Cents ($3,449,400.00); and

WHEREAS, the funding for the 2006 calendar year was adopted in Amendment No. 1 by the City Council on March 6, 2006 and approved by the Mayor on March 14, 2006 under Resolution 06-R-0549 in the amount of Two Million Three Hundred Twenty Thousand Six Hundred Dollars and No Cents ($2,320,600.00); and

WHEREAS, the funding for 2008 calendar year was adopted in Amendment No. 2 for by the by the City Council on November 19, 2007 and approved by the Mayor on November 27, 2007 under Resolution 07-R-2437 in the amount of One Million, Two Hundred Forty-Nine Thousand, Sixty-Four Dollars and No Cents ($1, 249,064.00).; and

WHEREAS, the Department of Watershed Management desires legislation to enter into Amendment No. 3 to identify funds for the 2009 calendar year for the Intergovernmental Agreement with U.S. Geological Survey, United States Department of Interior to perform Water Quality and Water Quantity Long-Term Monitoring Network and to maintain and operate water monitoring equipment; and

WHEREAS, the Commissioner of the Department of Watershed Management and the Chief Procurement Officer have recommended the execution of Amendment No. 3 for the Intergovernmental Agreement with U.S. Geological Survey, United States Department of Interior for FC-6004007858, Water Quality and Water Quantity Long Term Monitoring Network to maintain and operate water monitoring equipment for the 2008 calendar year in an amount not to exceed One Million One Hundred Eighteen Thousand Seven Hundred Forty Seven Dollars and No Cents ($1,118,747.00).

THE CITY COUNCIL OF THE CITY OF ATLANTA, GEORGIA, HEREBY RESOLVES, that the Mayor is authorized to execute Amendment No. 3 for the Intergovernmental Agreement with U.S. Geological Survey, United States Department of Interior ("U.S. Geological Survey") for FC-6004007858, Water Quality and Water Quantity Long Term Monitoring Network to provide additional funding for the 2009 calendar year in an amount not to exceed One Million One Hundred Eighteen Thousand Seven Hundred Forty Seven Dollars and No Cents ($1,118,747.00).

BE IT FURTHER RESOLVED, that the Chief Procurement Officer is hereby directed to prepare an appropriate Amendment No. 3 for execution by the Mayor.

BE IT FURTHER RESOLVED, that this Amendment No. 3 will not become binding on the City, and the City will incur no obligation or liability under it until it has been executed by the Mayor, attested to by the Municipal Clerk, approved as to form by the City Attorney and delivered to U.S. Geological Survey.

BE IT FURTHER RESOLVED, that the City further desires to acknowledge the contribution in kind for U.S. Geological Survey, United States Department of Interior in

an amount not to exceed One Hundred Fifty-Four Thousand Dollars and No Cents ($154,000.00).

BE IT FURTHER RESOLVED, that the Amendment No. 3 will add funding to this Intergovernmental Agreement from January 1, 2009 through December 31, 2009.

BE IT FURTHER RESOLVED, that the original conditions of said Intergovernmental Agreement FC-6004007858, Water Quality and Water Quantity Long Term Monitoring Network, Amendment No. 1 and Amendment No. 2 are specifically incorporated by reference herein.

BE IT FINALLY RESOLVED, that all services for said contracted work shall be charged to and paid from Fund Department Organization and Account Number 5051 (Water & Wastewater Revenue Fund) 170603 (DWM Industrial Wastewater Monitoring) 5213001 (Consulting/Professional Services-Technical) 7210000 (Protective Inspection Administration).

LEGISLATIVE SUMMARY
REQUEST FOR AMENDMENT NO. 3

FC-6004007858, Intergovernmental Agreement with the U.S. Geological Survey, United States Department of Interior Water Quality & Water Quantity Long Term Monitoring Network

TO: CITY UTILITIES COMMITTEE

CAPTION

A RESOLUTION
BY FINANCE/EXECUTIVE COMMITTEE

A RESOLUTION AUTHORIZING THE MAYOR TO EXECUTE AMENDMENT NO. 3 FOR THE INTERGOVERNMENTAL AGREEMENT WITH THE U.S. GEOLOGICAL SURVEY, UNITED STATES DEPARTMENT OF INTERIOR, FOR FC-6004007858, TO PROVIDE ADDITIONAL FUNDING FOR THE 2009 CALENDAR YEAR AND IN AN AMOUNT NOT TO EXCEED ONE MILLION ONE HUNDRED EIGHTEEN THOUSAND SEVEN HUNDRED FORTY SEVEN AND NO CENTS ($1,118,747.00) ON BEHALF OF THE DEPARTMENT OF WATERSHED MANAGEMENT; ALL CONTRACTED WORK SHALL BE CHARGED TO AND PAID FROM FUND, ACCOUNT AND CENTER NUMBER: 5051 (WATER & WASTEWASTER REVENUE FUND) 170603 (DWM INDUSTRIAL WASTEWATER MONITORING) 5213001 (CONSULTANT/PROF. SERVICES-TECHNICAL) 7210000 (PROTECTIVE INSPECTION ADMINISTRATION); AND FOR OTHER PURPOSES.

Committee Meeting Date:	**November 12, 2008**
Council Meeting Date:	**November 17, 2008**
Legislation Title:	**USGS IGA**
Requesting Dept.:	**Watershed Management**
Contract Type:	Intergovernmental Agreement
Source Selection:	Pursuant to City of Atlanta Procurement and Real Estate Code Section §2-1602 and §2-1604
Public Entity:	U. S. Geological Survey, United States Department of Interior
Funding Term:	January 1, 2009 thru December 31, 2009
Background:	The City of Atlanta, Department of Watershed of Management has a program known as "Clean Water Atlanta" to monitor the water quality of major streams and rivers that will be facilitated with the assistance of the United States Department of Interior.

	Original contract in the amount of $3,449,400.00 was executed 11/01/04 – 12/31/05 **(Legislative ID 04-R-1499)** **Amendment No. 1** in the amount of $2,320,600.00 was executed on 01/22/07 **(Legislative ID 06-R-0549)** **Amendment No. 2** in the amount of $1,249,064.00 was executed on 03/14/08 **(Legislative ID 07-R-2437)**
Justification:	The Department of Watershed Management desires to authorize 2009 calendar funding for the Water Quality and Water Quantity Long Term Monitoring Network to maintain and operate water monitoring equipment in the City of Atlanta.
Contractor:	**U.S. Department of Interior/Geological Survey**
Estimated Value:	**$1,118,747.00**
Scope Summary:	To provide both a comprehensive view of water quality and to allow the determination of stream loads (fluxes) of constituents, sources of contaminants, and changes over time. The program includes an extensive network of long-term, real-time stream flow and water-quality monitors, hydrologically-based stream water sampling for organic and inorganic contaminants and sediment.
Funding:	The term of this Agreement shall be for a period of one (1) year to cover the period from January 1, 2009 to December 31, 2009. The total cost of $1,118,747.00- includes contributions from USGS and the City of Atlanta.
Fund Account Centers:	5051 (WATER & WASTEWASTER REVENUE FUND) 170603 (DWM INDUSTRIAL WASTEWATER MONITORING) 5213001 (CONSULTANT/PROF. SERVICES-TECHNICAL) 7210000 (PROTECTIVE INSPECTION ADMINISTRATION) AND FOR OTHER PURPOSES.
Prepared By:	Kimberly Lyons, Contracting Officer
Contact Number:	(404) 865-8521

Part II: Legislative White Paper: (This portion of the Legislative Request Form will be shared with City Council members and staff)

A. To be completed by Legislative Counsel:

Committee of Purview: Finance/Executive Committee
Caption: **A RESOLUTION AUTHORIZING THE MAYOR TO EXECUTE AMENDMENT NO. 3 FOR THE INTERGOVERNMENTAL AGREEMENT WITH THE U.S. GEOLOGICAL SURVEY, UNITED STATES DEPARTMENT OF INTERIOR, FOR FC-6004007858, TO EXTEND THE TERM OF THE AGREEMENT FOR THE 2009 CALENDAR YEAR AND TO PROVIDE ADDITIONAL FUNDING IN AN AMOUNT NOT TO EXCEED ONE MILLION ONE HUNDRED EIGHTEEN THOUSAND SEVEN HUNDRED FORTY-SEVEN DOLLARS AND NO CENTS ($1,118,747.00) ON BEHALF OF THE DEPARTMENT OF WATERSHED MANAGEMENT; ALL CONTRACTED WORK SHALL BE CHARGED TO AND PAID FROM FUND, DEPARTMENT ORGANIZATION AND ACCOUNT NUMBER 5051 (WATER & WASTEWATER REVENUE FUND) 170603 (DWM INDUSTRIAL WASTEWATER MONITORING) 5213001 (CONSULTING/PROFESSIONAL SERVICES-TECHNICAL) 7210000 (PROTECTIVE INSPECTION ADMINISTRATION); AND FOR OTHER PURPOSES.**

Council Meeting Date: November 3, 2008

Requesting Dept.: Watershed Management

B. To be completed by the department:

1. Please provide a summary of the purpose of this legislation (Justification Statement).

Example: The purpose of this legislation is to anticipate funds from a local assistance grant to purchase child safety seats. The purpose of this legislation is to authorized a term and funding for one (1) year from January 1, 2009 to December 31, 2009 in an amount not to exceed $1,118,747.00. The total not to exceed amount of $1,118,747.00 includes contributions of $154,000.00 from USGS and $964,747.00 from the City of Atlanta. This is a reduction of $284,317.00 in the amount of the City's 2007 contribution.

2. Please provide background information regarding this legislation.

Example: The task force of homelessness conducted a study regarding homelessness, its impact and consequences on the City. This resolution reflects the Mayor's desire to open a twenty-four hour center that will respond to the needs of the homelessness in Atlanta.

United States Department of the Interior

GEOLOGICAL SURVEY
Water Resources Division
Peachtree Business Center, Suite 130
3039 Amwiler Road
Atlanta, Georgia 30360-2824

Customer Number: GA094
Agreement Number: 09E4GA2503004[illegible]
TIN: 586000511
Fixed Cost Agreement: NO - Reimbursable

September 25, 2008

Mr. Tracy Hillick
Program Manager
City of Atlanta
Bureau of Watershed Protection
263 Decatur Street
Atlanta, Georgia 30312

Dear Mr. Hillick:

Attached are two copies of the Joint Funding Agreement (JFA) with original signatures for the project entitled "the continued operation and routine maintenance of the water-quality and water-quantity monitoring network for the City of Atlanta, Georgia, as described in the enclosed scope of work dated September 5, 2008," and made part of this agreement. This agreement is entered into by the USGS under authority of 43 USC 36C; 43 USC 50; and 43 USC 50b.

This JFA covers the period beginning on January 1, 2009 and ending on December 31, 2009, at a total cost of $1,118,747 with a contribution of $154,000 from the USGS and $964,747 from the City of Atlanta, Georgia.

Please have each copy signed by an authorized official(s), retain one copy for your records, and return the other to the attention of Edward H. Martin, Director, at the address shown above. All work performed with funds from this agreement will be conducted on a reimbursable basis. Billing for the JFA will be rendered quarterly. The results of all work under this agreement will be available for publication by the U.S. Geological Survey.

If you have any questions or need any further information, please contact W. Brian Hughes, Supervisory Hydrologist, at 770-903-9162 or by email at wbhughes@usgs.gov.

Sincerely,

Edward H. Martin

Edward H. Martin, Director
USGS Georgia WSC
DUNS #937842847 / Cost Center 2503

#212

Project Work Plan

City of Atlanta Water-Quality Monitoring Program

September 5, 2008

U.S. Geological Survey

USGS
3039 Amwiler Rd., Suite 130
Atlanta, GA 30360

Phone 770 903 9100
Fax 770 903 9199

Project Description

In December 2002, the City of Atlanta (COA) and U.S. Geological Survey (USGS) began a program to monitor water quality for Atlanta-area streams. The development of this program reflects the city's need to monitor the effects of ongoing wastewater treatment infrastructure upgrades and wastewater management programs on water quality. The program also is intended to meet requirements for the City's stormwater quality and quantity monitoring programs. The COA/USGS monitoring program is designed to provide both a comprehensive view of water quality and to allow the determination of stream loads (fluxes) of constituents, sources of contaminants, and changes over time. In brief, the program includes an extensive network of long-term, real-time streamflow and water-quality monitors, hydrologically-based streamwater sampling for organic and inorganic contaminants and sediment. The purpose of this document is to describe the scope of work and associated costs for calendar year 2009.

Project History and Benefits

Since the program's inception in 2002, the USGS has monitored real-time streamflow and water-quality at 8 stations and streamflow-only at 2 stations. Water-quality samples were originally collected at 20 stations. Currently, the program collects real-time streamflow and water-quality data and collects water-quality samples at 11 stations. Water-quality samples have been collected during this time period over the full range of hydrologic conditions at the sites.

The data collected by the monitoring program and analyses of the data have been used for the following purposes:

1. **Real-time streamflow data**—A USGS flood-tracking chart has been prepared that allows Atlanta area property owners who live near streams to predict flood levels using information provided by the National Weather Service (NWS) and historical information on floods. Real-time flow and precipitation data collected by USGS as part of the LTWP are used by NWS to provide flood predictions and warnings for Atlanta streams.

2. **Real-time water-quality data**—The USGS has been able to support the COA Department of Watershed Management with the observation and location of potential and actual sewage spills. Data also have been used by COA to better manage water treatment at CSO facilities, which enhances water quality downstream of discharges.

3. **Bacteria sample analyses**—Analysis of USGS data provided the basis for the formulation of new bacteria target levels that were implemented as part of the updated monitoring program required for the Consent Decree. Ongoing analyses of data are used to update bacteria levels used to trigger investigations.

4. **Water-quality data and analyses**—Summaries of USGS data and interpretive analysis were used by COA contractors to develop a Watershed Management Plan that is required for stormwater NPDES permitting.

Scientific presentations and publications—The following presentations highlighting the ongoing efforts of the COA to improve water quality were made in 2008. A complete list of presentations and publications is listed in appendix A.

LaFontaine, J.H., 2008, Hydrologic Characteristics of Watersheds in Metropolitan Atlanta, Georgia 2003-2007: USGS CHIDER Conference, Tunica, MS.

The following paper was published in 2008:

Horowitz, A.J., Elrick, K.A., and Smith, J.J., 2008. Monitoring Urban Impacts on Suspended Sediment, Trace Element, and Nutrient Fluxes Within the City of Atlanta, Georgia, U.S.A.: Program Design, Methodological Considerations, and Initial Results, Hydrological Processes , 22, 1473 – 1496.

Project Objectives

The scope of work for this project includes operation and maintenance of water-quantity and water-quality monitoring instruments; collection and analysis of water-quality samples; processing, quality assuring, and publishing data; interpretation and report writing; and presentation of results at meetings, workshops, and conferences. The watersheds monitored in the City of Atlanta include Peachtree Creek, Nancy Creek, Proctor Creek, Utoy Creek, South River, and Intrenchment Creek.

The main objectives of the long-term monitoring program include:

1) **Identify sources of impairment**—Identifying sources of water-quality impairment can be a difficult and time-consuming task. The long-term monitoring program will provide real-time measures of stream water-quality that can be used to identify periods when point-sources of pollution are active. The monitoring can also be used to narrow the location of sources and to determine relations between specific types of land use and water-quality impairment.

2) **Determine trends in water quality, particularly with respect to upgrades in wastewater infrastructure**—The COA has completed work on the Nancy Creek tunnel and completion of the East and West CSO tunnels is projected within a few years. The combined effects of these tunnels should be observable in such measures of water quality as pH, dissolved oxygen, specific conductance, and turbidity. Water quality samples are used to calculate loadings, or the total mass of material transported by a stream for a specific period. Long-term changes in the loadings of constituents such as dissolved nitrogen and phosphorus should be observed as sewage overflows are reduced through the implementation of infrastructure improvements and other programs such as CMOMs.

3) **Consolidate, replace, or supplement existing water-quality monitoring programs**—The monitoring program can be used to support work required by the COA for NPDES storm-water permits and monitoring required for the SSO Consent Decree. USGS water-quality data will be used to comply with monitoring required for the Metropolitan North Georgia Water Planning District.

4) **Provide information to the City, State, and public that can be used to make management decisions that affect water quality**—The monitoring program can be used to determine the effects of different watershed management and infrastructural improvements on water quality. The monitoring data will be key to understanding if programs are working or not. In addition, state agencies can determine if programs that are effective in Atlanta would be applicable to other municipalities and urban areas in Georgia.

Project Approach

The USGS proposes to include the following tasks in the monitoring program:

Task 1. **Collect continuous, real-time monitoring of streamflow and water-quality parameters**—Monitoring equipment are currently installed at 11 sites to provide data on discharge (stream flow), temperature, pH, conductivity, turbidity, and dissolved oxygen. Measurements are made at 15-minute intervals and transmitted at near real-time to the USGS office in Atlanta. Field-deployed equipment requires constant monitoring and maintenance to ensure high-quality data.

Task 2. **Collect water-quality samples using automatic and manual techniques**—Water samples are collected primarily during storms, the time when most transport of dissolved and suspended constituents that can affect water quality occurs. A limited number of water-quality samples are collected during baseflow (low-flow) periods. Quality-control samples also are collected in the field. A change for 2009 will be the elimination of sample collection for sediment chemistry.

Task 3. **Analysis of water and sediment samples**—Samples to be analyzed for dissolved constituents (major ions, nutrients, metals, organic carbon) and physical/chemical characteristics (biological oxygen demand (BOD), chemical oxygen demand (COD), total suspended solids (TSS), total dissolved solids (TDS), and hardness) will be analyzed at the City of Atlanta Water-Quality Laboratory Some samples will be analyzed at the USGS National Water Quality Laboratory for a limited number of constituents. Samples for bacteria will be analyzed at the USGS Water Science Center Bacteria Laboratory.

Task 4. **Perform analysis of quality control/quality assurance data and manage data base**—Water quality and quantity data will be continuously monitored to determine if the data meets quality standards. Sample contamination issues will be addressed in field or laboratory procedures. Reviews of data by local, Regional, and National USGS personnel will be completed.

Task 5. **Maintenance of real-time data available on the internet**—After transmission to the USGS office in Atlanta, all real-time water quality and quantity data are made available on the internet. These data are monitored at least daily to insure that instrumentation are functioning properly and to identify potential point source releases or sewage spills.

Task 6. **Annual publication of data**—The USGS publishes an annual internet-based report that includes all data collected in the state of Georgia.

Task 7. **Project Management**—Oversight and project team supervision will be provided. Liaison with COA, COA contractors, and technical advisory committees is accomplished. Project workplans and billing documents are prepared.

Roles and Responsibilities

The LTMP has multiple levels of oversight including: COA oversight, USGS internal project management, and a Technical Advisory Committee (TAC) (figure 1).

The USGS LTMP chief is responsible for project planning, technical oversight, liaison with the COA, project staffing, and project financial/logistical support. The USGS field chief is responsible for coordination of all field operations including maintenance of instruments, sample collection, supervision of field teams, sample processing, and data entry. The USGS has an intensive program of procedural and data review that involves the Georgia Water Science Center, as well as Regional and Headquarters personnel. Each laboratory used for the COA project has an intensive QA/QC program and participates in external quality assurance programs. Typically, all the water-quality projects and the laboratories in the USGS Georgia Water Science Center are reviewed every three years by USGS Branch of Quality Assurance, Headquarters, and Regional staff. The most recent review was held in 2007. All data are reviewed on an annual basis by USGS Georgia Water Science Center staff. In 2008, we began using the City of Atlanta Water-Quality Laboratory for chemical analyses. Jim Smith was added to project staff to coordinate activities and procedures and to conduct the additional quality control procedures required by USGS when using non-USGS laboratories. Jim is working with the COA Laboratory Chief, Thomas Bourne to coordinate activities.

The COA project has a Technical Advisory Committee (TAC), which currently is chaired by Sally Bethea, the Executive Director of the Upper Chattahoochee Riverkeeper Organization. The TAC members include individuals from the Upper Chattahoochee Riverkeeper, Georgia Environmental Protection Division, U.S. Environmental Protection Agency, Georgia Institute of Technology, Georgia State University, and Cobb-Marietta Water Authority. The group meets approximately quarterly to obtain information on program progress and potential problems and to discuss any changes to the program. The purpose of the TAC is to provide technical oversight and external review for the COA project.

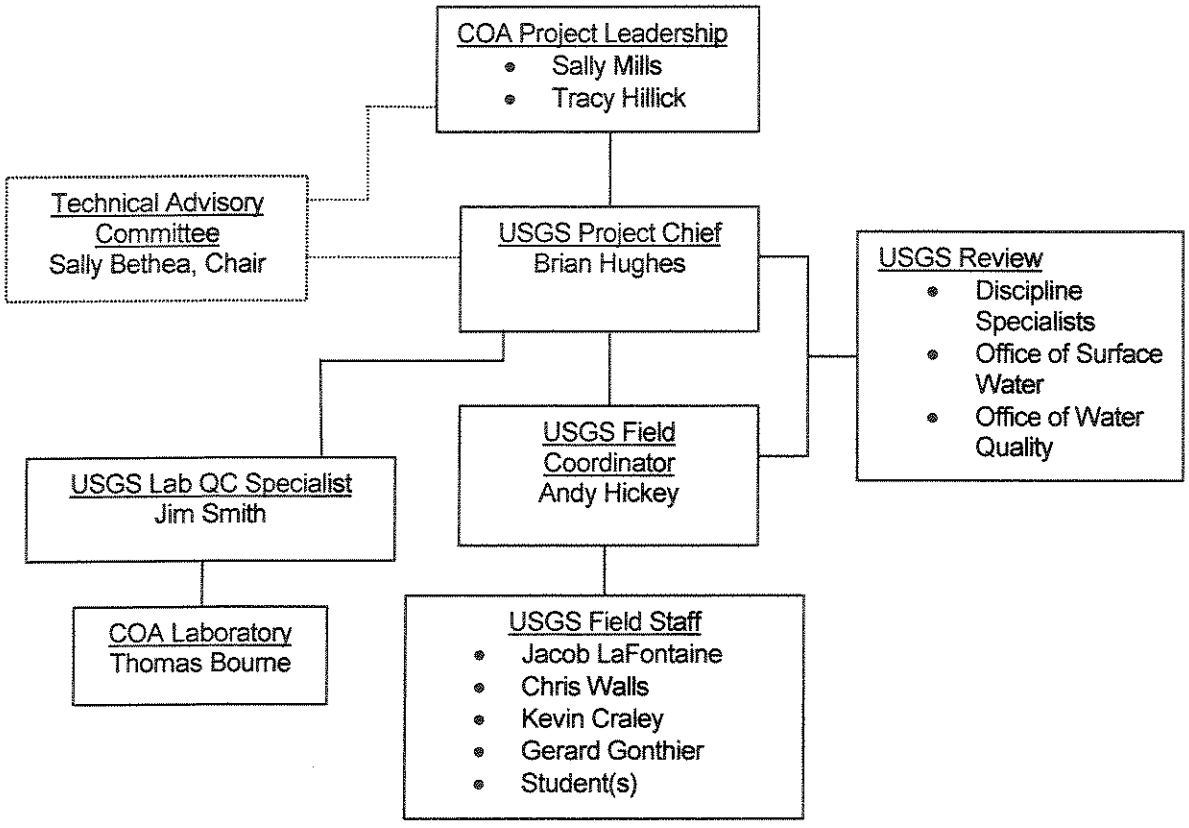

Figure 1.—Long-Term Monitoring Project Organization

Scope of Work

The scope of work for this project includes installation, operation, and maintenance of water-quantity and water-quality monitoring instruments; collection and analysis of water-quality samples; and processing, quality assuring, and publishing data. The watersheds monitored in the City of Atlanta include Peachtree Creek, Nancy Creek, Proctor Creek, Utoy Creek, South River, and Intrenchment Creek.

Task 1–Collect continuous, real-time monitoring of streamflow and water-quality parameters

Sampling Network Design

The current sampling network for the COA project consists of 11 long-term monitoring stations (figure 2, table 1). Each of these stations is instrumented to monitor the following parameters: stage (water level), discharge, pH, conductivity, temperature, dissolved oxygen, and turbidity. Rainfall is currently monitored at 9 of the sites.

Field Measurements and Instrument Calibration

All field instrumentation is checked as needed; this includes cleaning, calibration, and maintenance. The real-time sensors are checked to determine that they are measuring current conditions accurately by calibrating with known standards and comparing with sensors calibrated each field day under laboratory conditions. Discharge at instrumented sites is measured at least six times per year to establish and check the stage/discharge relation. This relation is used to convert real-time stage measurements to discharge data. One year of data collection typically is needed to develop a site-specific stage-discharge relation, assuming there are no complicating factors such as backwater conditions. Once a discharge rating is developed for a site, subsequent measurements are used to check or adjust the rating if channel morphology has changed.

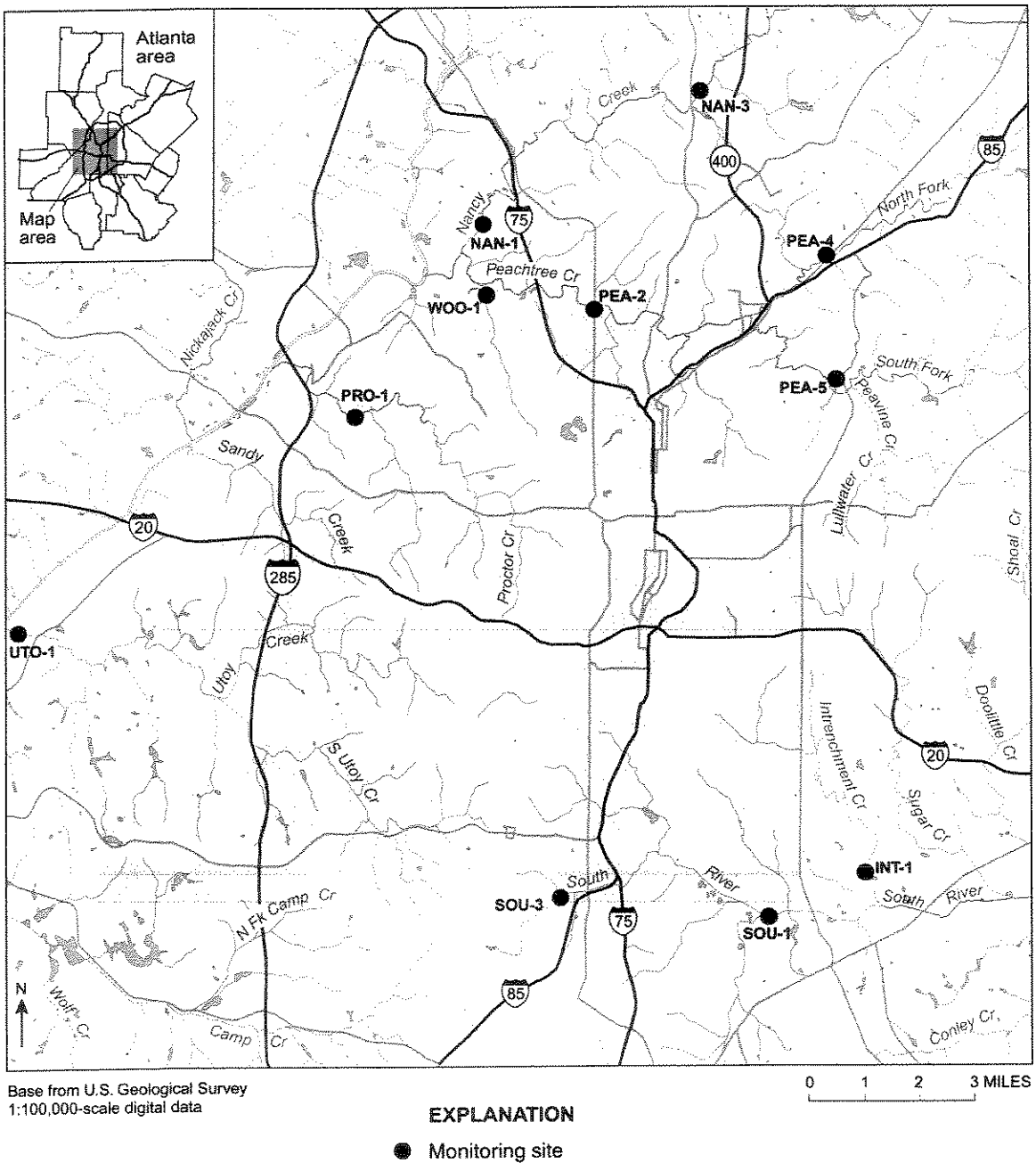

Figure 2. Location of sampling sites for the City of Atlanta Long-Term Water-Quality Monitoring Program.

Table 1. Site information and planned numbers of samples for the City of Atlanta Long-Term Water-Quality Monitoring Program in 2009.

Station Number	Site Name	Site Type	Field ID	Number of Environmental Samples
02203700	Intrenchment Creek @ Constitution Road	Real-time SW/QW and ISCO	INT-1	26
02336410	Nancy Creek @ W. Wesley Road	Real-time SW/QW and ISCO	NAN-1	26
02336360	Nancy Creek @ Rickenbacker Dr.	Real-time SW/QW and ISCO	NAN-3	26
02336300	Peachtree Creek @ Northside Dr.	Real-time SW/QW and ISCO	PEA-2	26
02336120	NF Peachtree Creek @ Buford Hwy.	Real-time SW/QW and ISCO	PEA-4	26
02336240	South Fork Peachtree Creek @ Johnson Rd.	Real-time SW/QW and ISCO	PEA-5	26
02336526	Proctor Creek @ James Jackson Pkwy.	Real-time SW/QW and ISCO	PRO-1	26
02203655	South River @ Forrest Park Rd.	Real-time SW/QW and ISCO	SOU-1	26
02203603	South River @ Springdale Rd.	Real-time SW/QW and ISCO	SOU-3	26
02336728	Utoy Creek @ Great Southwest Pkwy.	Real-time SW/QW and ISCO	UTO-1	26
02336313	Woodall Creek	Real-time SW/QW and ISCO	WOO-1	26

Task 2– Collect water-quality and sediment samples using automatic and manual techniques

Collection of automatic samples

Water-quality samples will be collected at all 11 long-term stations for the period covered by this work plan. Previously in this program, most samples were collected on a hydrologic basis in order to determine relations between sediment and chemical constituents and flow conditions, as well as to determine if surrogates such as conductivity or turbidity could be used to estimate chemical constituent concentrations. Such relations have been established, so there is no longer a need to collect discrete samples over the storm hydrograph, nor as frequently during baseflow conditions. Therefore, the majority of environmental samples will be collected using automated samplers and will be composite, flow-weighted samples that represent stormwater runoff conditions. A limited number of baseflow samples also will be collected.

Task 3– Chemical analysis of water and sediment samples

Chemical analysis of water column constituents

The analytical scheme for water samples includes the following major groups of constituents:

1. **Major Ions** — Calcium, magnesium, sodium, potassium, fluoride, chloride, bromide, sulfate, and bicarbonate are derived from natural weathering processes and atmospheric deposition. Highly significant relations typically exist among major ion concentrations in surface waters and groundwater due to the water-quality evolution from natural processes. However, human activities can alter these relations by the addition of contaminants and the alteration of water pathways resulting in a mixture of solutes from natural and human sources. Urbanization alters the hydrologic pathways by the construction of impervious surfaces (buildings, driveways, walkways, and roads) and the channelization of existing drainages. Wastewater, and often treated water, contains higher concentrations of some solutes, in particular, sulfate, chloride, sodium, calcium, and potassium, and relations among major ion concentrations in streams containing wastewater are different compared with natural or unimpacted water.

2. **Nutrients** — Nitrogen, phosphorus, and carbon compounds typically are associated with point- and nonpoint source urban and stormwater runoff including treated and untreated sewage. These constituents can derive from the breakdown of organic waste (for example, lawn clippings and kitchen waste) and natural sources of organic detritus such as trees, shrubs, and grasses. Another major source of nutrients is from fertilizer applications on residential and commercial sites. Excess nutrient loadings can result in artificially enhanced biological growth (eutrophication) in downstream impoundments and lead to problems with dissolved oxygen levels in streams and reservoirs.

3. **Trace elements** — Silver, lead, zinc, copper, cadmium, and mercury typically are associated with point- and non-point source urban and stormwater runoff including treated wastewater and have been identified as a cause for stream reach impairment in COA basins. For example, silver is associated with photography and has been found in treated wastewater. Copper, lead, and zinc are associated with plumbing and plumbing fixtures. Also, zinc is a component of automobile tires and asphalt shingle roofs where it is used as an algaecide and to prevent mildew. Runoff from roads, areas containing tires such as landfills, and asphalt roofs can result in elevated zinc concentrations in streams.

4. **Sediment (concentrations in water)** — In excess, suspended sediment represents a major physical cause of impaired stream reaches in COA basins. In addition, suspended sediment represents a significant carrier for a wide variety of chemical constituents including trace elements, nutrients, and persistent hydrophobic organic compounds.

5. **Biological oxygen demand (BOD) and chemical oxygen demand (COD)**— These parameters can be used to estimate pollutant loads to

streams and to determine downstream impacts on dissolved oxygen concentrations.

6. **Total suspended solids (TSS) and total dissolved solids (TDS)**—These measures provide estimates of total organic and inorganic material present in a water sample.

The scheme for analysis of samples collected for the COA program is outlined in table 2. We plan to collect 26 composite flow-weighted samples at each of the 11 sites during the 12 months covered by this work plan. This will result in a total of 286 complete chemical analyses. The actual number of samples collected may vary from the target due to the frequency and quantity of rainfall and subsequent runoff during the year. BOD, COD, TSS, TDS, and hardness will be measured in samples collected at 9 of the total 11 sites that are currently monitored for the COA program to be in compliance with the Metropolitan North Georgia Water Planning District (MNGWPD) requirements. The two sites that would be excluded from this sampling are Utoy Creek at Great Southwest Parkway (UTO-1) and Intrenchment Creek at Constitution Road (INT-1). All of the other constituents required by the MNGWPD are being monitored at all 11 sites. The primary samples used for monitoring, data analysis, and calculation of loads will be the 26 automated samples.

Table 2. Number of water-quality analyses to be conducted for environmental samples collected for the City of Atlanta Long-Term Water-Quality Monitoring Program for 2009.

Analysis Types	Number of Analyses		
	Automated Samples	QA/QC Samples	Total
Dissolved Major Ions, Nutrients, and Trace Metals, and suspended sediment	286	27	313
Biological Oxygen Demand, Chemical Oxygen Demand, Total Dissolved Solids, Total Suspended Solids, Hardness	72	8	81

Task 4—Perform analysis of quality control/quality assurance and manage data

Quality control/quality assurance

Water-quality sample collection and analysis is subject to errors resulting from numerous sources. These can include operational errors such as mislabeling samples, sample contamination, improper preservation, or laboratory equipment instability or failure. In order to determine the accuracy of water-quality data, quality-control samples are

collected and analyzed. The samples typically consist of blanks, replicates, and spikes. Blanks are used to determine potential equipment contamination, if any, and consist of analysis of dionized/distilled water. Replicates are splits of the same sample that are analyzed separately to determine the reproducibility of data. Spikes contain a known concentration of a chemical constituent and are used to determine the accuracy of laboratory methods and the effects of the water matrix on chemical constituents. Approximately 10 percent of the samples analyzed for the LTMP will be QA/QC samples. Analyses of these samples will provide information on errors and help to correct potential problems with data.

Manage data

USGS field personnel will analyze all the continuous data, and apply any necessary corrections (e.g., deleting outliers, editing data; correcting for variable shifts in the real-time data and/or the stage/discharge relation) on an approximately weekly basis. Laboratory data received from the City of Atlanta Water-Quality Laboratory will be checked, quality assured, and loaded into the USGS data base system.The data will be stored in the USGS National Water Information System (NWIS) database, which is linked to the Georgia Water Science Center NWISWeb internet page for real-time data display. These data will be permanently archived as a matter of public record. All data will be checked and reviewed annually by qualified USGS hydrologists in preparation for publication. The USGS also will perform an external review at least once every three years to ensure national consistency through the use of approved techniques and protocols.

Task 5—Maintenance of real-time data available on the internet

Real-time data will be publicly accessible, through the USGS NWISWeb internet website, which automatically displays all parameters collected and transmitted from each continuous monitoring site. Discrete water-quality data will be uploaded annually to the USGS NWISWeb internet site. More frequent retrievals can be made upon request.

Task 6—Annual publication of data

All data will be published annually in a web-based report entitled "Water Resources for Georgia, Water Year xxxx". The report includes all the environmental data collected by USGS in the state of Georgia. Data are checked for errors, summarized in tables, and available for download on the USGS public website. Data are available more frequently by request.

Task 7—Project management

This task includes the labor and expenses necessary to conduct periodic briefings/meetings with COA and COA contractors, quarterly TAC meetings, preparation of proposals and other project documentation including billing documents.

Long-Term Plans

The activities of high-density, urban populations such as in Atlanta will necessarily have an effect on water quality. The extent to which these effects are mediated depend on the types of land-use practices, the type of storm and sanitary sewer infrastructure, and the management and condition of the infrastructure. The management of factors that control water-quality in urban areas is an ongoing and often difficult task. Because of the magnitude of the task, the increasing population, and continuing land-use changes in the Atlanta Metropolitan area, a water-quality monitoring program will probably be a mandatory part of the COA's routine operations for the foreseeable future.

The current LTMP has developed relations between real-time measurements of water quality and sediment concentrations. The sediment rating curves allow for sediment concentrations to be estimated, with excellent accuracy. Using these curves, annual sediment loadings can be determined with a relatively small number of samples collected each year to insure that there is not shift in the rating. Development of these types of relations may be possible over time for other constituents. If this is possible, then fewer actual samples need to be collected and fewer chemical analyses done, with a significant savings in time, effort, and money.

In the short-term (2-5 years), the USGS anticipates that the LTMP will need to continue the sampling and data analysis near the current level to meet the objectives of the project. In the longer term (5-15 years), it may be possible to reduce the number of samples, frequency of samples, or number/types of analytes with no loss of ability to interpret data. In addition, any new water-quality problems that might arise in that period could require additional samples or analyses to address the problems. USGS recommends that the COA and USGS review annually the scope of the program to determine if any changes are necessary.

Another factor that influences the monitoring program is the potential for the COA to takeover all or part of the responsibility for management and operation the program. In discussions with COA management we envision this change occurring over a period of several years, with USGS providing training and support to COA to implement the changeover.

Project Costs

The current scope of work covers from January 1, 2009 to December 31, 2009. The costs are broken down by task in table 3 below.

Table 3.—Project costs by task.

Task	Description	Cost	Percentage of Total Cost	Total Labor Hours
1	Real-Time Monitoring	$316,459	28%	4,652
2	Sample Collection	$267,540	24%	2,482
3	Chemical Analyses	$29,763	3%	0
	Bacteria Analyses	$41,599	4%	0
4	QA/QC and Data Management	$186,806	17%	2,792
5	Real-Time Internet Data	$70,527	6%	902
6	Annual Data Publication	$154,299	14%	2,012
7	Project Management	$48,289	5%	520
	Project Total	$1,118,747	100%	14,752
	USGS Share of Cost	$154,000	14%	
	COA Share of Cost	$964,747	86%	

As part of the joint-funding agreement associated with this scope of work, the USGS has agreed to provide $154,000 in cost share for the project; therefore the cost of the project for the COA for the period January 1, 2009-December 31, 2009 will be $964,747.

Appendix A—Presentation and Publications

Presentations

Horowitz, A.J., Elrick, K.A., Smith, J.J. 2005, The Design, Implementation, and Initial Results from a Water Quality Monitoring Network for Atlanta, Georgia, USA, IAHS VII Scientific Assembly, Symposium on Sustainable Water Management Solutions for large Cities. Foz do Iguacu, Brazil, 4/2005.

Horowitz, A.J., 2005, Some Initial Sediment-Associated Trace Element Results from the City of Atlanta, GA, Water-Quality Monitoring Network, Georgia Water Resources Conference, Athens, GA, 4/2005.

Horowitz, A.J., 2005, The City of Atlanta Water-Quantity and Water-Quality Monitoring Program, Atlanta Geological Society, 8/2005.

Horowitz, A.J., Elrick, K.A., and Smith, J.J., 2007. Results From the City of Atlanta Water-Quantity and Water-Quality Monitoring Program: Suspended Sediment, Trace Element, and Nutrient Fluxes, 2004–2005, Georgia Water Resources Conference, Athens, Georgia, March, 2007.

Horowitz, A.J., Elrick, K.A., and Smith, J.J., 2007, Measuring the Fluxes of Suspended Sediment, Trace Elements, and Nutrients for the City of Atlanta, USA: Insights on the Global Water Quality Impacts of Increasing Urbanization, XXIV General Assembly of IUGG, Perugia, Italy, July, 2007.

Horowitz, A.J., 2007, An Introduction to the City of Atlanta and the U.S. Geological Survey's Water Quantity and Water Quality Monitoring Program, Joint Georgia Planning Association/Georgia Association of Landscape Architects Spring Meeting, Atlanta, Georgia, March 2007.

Horowitz, A.J., Elrick, K.A., and Smith, J.J., 2007, Measuring the Fluxes of Suspended Sediment, Trace Elements, and Nutrients for the City of Atlanta, USA: Insights on Developing and Maintaining a Large-Scale Urban Water-Quality Monitoring Program, U.S.G.S. National Water-Quality Workshop, Galveston, Texas, November, 2007.

Horowitz, A.J., Elrick, K.A., and Smith, J.J., 2009, An Update on Sediment Studies Associated with the City of Atlanta Long-Term Monitoring Program, Georgia Water Resources Conference, Athens, Georgia, (submitted)

Hughes, W.B., 2004, Urban Hydrology in Georgia: A Delicate Mix of Science and Politics: USGS Eastern Region Data Conference, Raleigh, North Carolina, June 15, 2004.

LaFontaine, J.H. 2006, Automatic Sampling for Emerging Contaminants: 2006 USGS Eastern Region Data Conference, Louisville, KY.

LaFontaine, J.H., 2006, Flood-Tracking Chart for Chattahoochee River Basin in Metropolitan Atlanta, Georgia: 2006 National Water-Quality Monitoring Conference, San Jose, CA.

LaFontaine, J.H., 2007, Flood-Tracking Char Chart for Chattahoochee River Basin in Metropolitan Atlanta, Georgia: 2007 Georgia Water Resources Conference, Athens, GA.

LaFontaine, J.H., 2007, Hydrologic Characteristics of Watersheds in Metropolitan Atlanta, Georgia 2003-2006, 2007 USGS National Surface-Water Conference, St. Louis, MO.

LaFontaine, J.H., 2007, Flood-Tracking Char Chart for Chattahoochee River Basin in Metropolitan Atlanta, Georgia: 2007 National Hydrologic Warning Council, Savannah, GA.

LaFontaine, J.H. 2008, Hydrologic Characteristics of Watersheds in Metropolitan Atlanta, Georgia 2003-2007, 2008 Chider Conference, Tunica, MS.

Publications

Aulenbach, B.T., Bacteria holding-time experiments for the City of Atlanta Water-Quality monitoring program: (journal article in review)

Horowitz, A.J., Elrick, K.A., and Smith, J.J., 2005, Some Initial Sediment-Associated Trace Element Results from the City of Atlanta, Water-Quality Monitoring Network, In Proceedings of the 2005 Georgia Water Resources Conference, April 25 – 27, 2005 (ed. K.J. Hatcher), The University of Georgia, Athens, GA, CD-ROM, 6 p.

Horowitz, A.J., Elrick, K.A., and Smith, J.J., 2005, Design, Implementation, and Initial Results from a Water-Quality Monitoring Network for Atlanta, Georgia, U.S.A.. In Sustainable Water Management Solutions for Large Cities (ed. Savic, D.A., Bertoni, J.C., Marino, M.A., and Savanije, H.H.G.), IAHS Publication 293, 245 – 256.

Horowitz, A.J. and Hughes, W.B., 2006, The U.S. Geological Survey and City of Atlanta Water-Quality and Water-Quantity Monitoring Network. U.S. Geological Survey Fact Sheet 2005-3126, 4p.

Horowitz, A.J., Elrick, K.A., and Smith, J.J., 2007. Results From the City of Atlanta Water-Quantity and Water-Quality Monitoring Program: Suspended Sediment, Trace Element, and Nutrient Fluxes, 2004–2005, In: (ed. Rasmussan, Todd; Carroll. G.D., and Georgakakos, Aris) Proceedings of the 2007 Georgia Water Resources Conference, Athens, Georgia, March, 2007, CD-ROM, 10 p.

Horowitz, A.J., Elrick, K.A., and Smith, J.J., 2007. Measuring the Fluxes of Suspended Sediment, Trace Elements, and Nutrients for the City of Atlanta, U.S.A.: Insights on the Global Water Quality Impacts of Increasing Urbanization, In: (ed. Webb, B.W. and De Boer, D.) Proceedings of the IAHS Symposium on Water Quality and Sediment Behavior of the Future: Predictions for the 21st Century, IAHS Publication 314, 57 – 70.

Horowitz, A.J., Elrick, K.A., and Smith, J.J., 2008. Monitoring Urban Impacts on Suspended Sediment, Trace Element, and Nutrient Fluxes Within the City of Atlanta, Georgia, U.S.A.: Program Design, Methodological Considerations, and Initial Results, Hydrological Processes , 22, 1473 – 1496.

Horowitz, A.J., 2009, Monitoring Sediment and Sediment-Associated Chemistry and Annual Fluxes in Urban Environments: Lessons From the City of Atlanta, Georgia, U.S.A. Water Quality Monitoring Program, Journal of Soils and Sediments (in review).

Joiner, J.K., 2003, New water-quality monitoring efforts in Metropolitan Atlanta, Georgia: *in*, Hatcher, K.J. (ed.), Proceedings of the 2003 Georgia Water Resources Conference, April 23-24, 2003, University of Georgia, Athens, Georgia, CD-ROM.

LaFontaine, J.H. and Hillick, T.A., 2003, Overview of the City of Atlanta water-quality monitoring network: 2004 Water Environment Federation Technical Exhibition and Conference, October 2-6, 2004, New Orleans, Louisiana

LaFontaine, J.H., McCallum, B.E., Stamey, T.C., and Wipperfurth, C.J., 2006, Flood-tracking chart, Chattahoochee River Basin in Metropolitan Atlanta, Georgia: U.S. Geological Survey General Information Product 34, 1 sheet.

Peters, N.E., 2005, Preliminary analysis of the water quality variability of urban streams, Atlanta, Georgia, May 2003-October 2004: *in*, Hatcher, K.J. (ed.), Proceedings of the 2005 Georgia Water Resources Conference, April 25-27, 2005, University of Georgia, Athens, Georgia, CD-ROM.

Peters, N.E., Frick, E.A., Painter, J.A., and Hillick, T.A., 2004, Organic wastewater compounds in urban streams, Atlanta, Georgia: National Ground-Water Association.

Appendix B—Water-Quality Analyses

Trace Elements in Water

Aluminum
Cadmium
Chromium
Copper
Lead
Manganese
Nickel
Silver
Zinc

Major Ions and Nutrients in Water

Nitrogen, ammonia
Nitrogen, ammonia and organic nitrogen
Nitrogen, nitrite
Nitrogen, nitrate
Phosphorus, orthophosphate
Dissolved phosphorus
Total phosphorus
Sulfate
Chloride
Sodium
Calcium
Magnesium

Major Ions and Nutrients in Water (cont.)

Potassium
Iron
Silica
Alkalinity

Other Water-Quality Measures

Biological oxygen demand
Chemical oxygen demand
Total suspended solids
Total dissolved solids
Hardness
Suspended Sediment concentration

TRANSMITTAL FORM FOR LEGISLATION

TO: MAYOR'S OFFICE **ATTN: GREG PRIDGEON**

Dept.'s Legislative Liaison: Maisha L. Wood

Contact Number: (404) 330-6887

Originating Department: Department of Watershed Management
Committee(s) of Purview: Finance/Executive Committee

Chief of Staff Deadline: October 15, 2008

Anticipated Committee Meeting Date(s): October 29, 2008

Anticipated Full Council Date: November 3, 2008

Legislative Counsel's Signature:

Commissioner Signature: Robert D. Hunter

Chief Procurement Officer Signature: for Paul L. Smith

CAPTION

A RESOLUTION AUTHORIZING THE MAYOR TO EXECUTE AMENDMENT NO. 3 FOR THE INTERGOVERNMENTAL AGREEMENT WITH THE U.S. GEOLOGICAL SURVEY, UNITED STATES DEPARTMENT OF INTERIOR, FOR FC-6004007858, TO EXTEND THE TERM OF THE AGREEMENT FOR THE 2009 CALENDAR YEAR AND TO PROVIDE ADDITIONAL FUNDING IN AN AMOUNT NOT TO EXCEED ONE MILLION ONE HUNDRED EIGHTEEN THOUSAND SEVEN HUNDRED FORTY-SEVEN DOLLARS AND NO CENTS ($1,118,747.00) ON BEHALF OF THE DEPARTMENT OF WATERSHED MANAGEMENT; ALL CONTRACTED WORK SHALL BE CHARGED TO AND PAID FROM FUND, DEPARTMENT ORGANIZATION AND ACCOUNT NUMBER 5051 (WATER & WASTEWATER REVENUE FUND) 170603 (DWM INDUSTRIAL WASTEWATER MONITORING) 5213001 (CONSULTING/PROFESSIONAL SERVICES-TECHNICAL) 7210000 (PROTECTIVE INSPECTION ADMINISTRATION); AND FOR OTHER PURPOSES.

FINANCIAL IMPACT (if any): $1,118,747.00

Mayor's Staff Only

Received by CPO: _____ (date) **Received by LC from CPO:** _____ (date)

Received by Mayor's Office: 10/28/08 AMC (date) **Reviewed by:** _____ (date)

Submitted to Council: _____ (date)